

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>875.074wo1</b>	<b>FOR FURTHER ACTION</b>		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. <b>PCT/US2004/010045</b>	International filing date (day/month/year) <b>31/03/2004</b>	(Earliest) Priority Date (day/month/year) <b>31/03/2003</b>	
Applicant  <b>UNIVERSITY OF IOWA RESEARCH FOUNDATION</b>			

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

**2.** ☒ Certain claims were found unsearchable (See Box II).

**3.** ☒ Unity of invention is lacking (see Box III).

**4. With regard to the title,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

**5. With regard to the abstract,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 39.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. With regards to the drawings,**

a. the figure of the drawings to be published with the abstract is Figure No. 13

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/010045

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claims 1-60 could be understood to be directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,  
no additional fees are to be refunded.

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
  
1-32, 61, 65 (all claims completely), claims 33-60, 62-64  
66 (all claims partially)
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US2004/010045

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/864 A61K48/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, MEDLINE, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/75365 A (ENGELHARDT JOHN F ; UNIV IOWA RES FOUND (US); DUAN DONGSHENG (US)) 14 December 2000 (2000-12-14)	1-66
Y	discussion on page 82 ff. page 79, line 1 - page 80, line 3; claims 82,83	33-60, 62-64,66
X	DUAN D ET AL: "Endosomal processing limits gene transfer to polarized airway epithelia by adeno-associated virus" JOURNAL OF CLINICAL INVESTIGATION, NEW YORK, NY, US, vol. 105, no. 11, June 2000 (2000-06), pages 1573-1587, XP002962239 ISSN: 0021-9738	1-66
Y	cited in the application abstract; figures 2,9	33-60, 62-64,66
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*C\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*A\* document member of the same patent family

Date of the actual completion of the international search

10 December 2004

Date of mailing of the international search report

10.01.05

Name and mailing address of the ISA

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>TERAMOTO S ET AL: "Factors influencing adeno-associated virus-mediated gene transfer to human cystic fibrosis airway epithelial cells: Comparison with adenovirus vectors"</p> <p>JOURNAL OF VIROLOGY, THE AMERICAN SOCIETY FOR MICROBIOLOGY, US, vol. 72, no. 11, November 1998 (1998-11), pages 8904-8912, XP002154339 ISSN: 0022-538X abstract; figure 9</p>	1-66
Y	<p>MENG LIHAO ET AL: "Epoxomicin, a potent and selective proteasome inhibitor, exhibits in vivo antiinflammatory activity"</p> <p>PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE, WASHINGTON, US, vol. 96, no. 18, 31 August 1999 (1999-08-31), pages 10403-10408, XP002168150 ISSN: 0027-8424 abstract</p>	33-60, 62-64,66
Y	<p>KIYOMIYA KEN-ICHI ET AL: "The role of the proteasome in apoptosis induced by anthracycline anticancer agents"</p> <p>INTERNATIONAL JOURNAL OF ONCOLOGY, vol. 20, no. 6, June 2002 (2002-06), pages 1205-1209, XP002310166 ISSN: 1019-6439 abstract</p>	33-60, 62-64,66
A	<p>ARCAMONE F M: "From the pigments of the actinomycetes to third generation antitumor anthracyclines"</p> <p>BIOCHIMIE (PARIS), vol. 80, no. 3, March 1998 (1998-03), pages 201-206, XP002310167 ISSN: 0300-9084 abstract</p>	33-60, 62-64,66
A	<p>ELLIOTT P J ET AL: "RECENT ADVANCES IN UNDERSTANDING PROTEASOME FUNCTION"</p> <p>CURRENT OPINION IN DRUG DISCOVERY AND DEVELOPMENT, CURRENT DRUGS, LONDON, GB, vol. 5, no. 2, 1999, pages 484-490, XP001070303 ISSN: 1367-6733 page 484, right-hand column, paragraph 3 - page 486, right-hand column, last paragraph</p>	1-66

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>YAN Z ET AL: "Trans-splicing vectors expand the utility of adeno-associated virus for gene therapy"  PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE, WASHINGTON, US,  vol. 97, no. 12, 6 June 2000 (2000-06-06),  pages 6716-6721, XP002162085  ISSN: 0027-8424  abstract; figure 1</p>	9-15, 35-40
A	<p>EP 1 153 612 A (KITASATO INST ; NIPPON KAYAKU KK (JP); TSURUO TAKASHI (US))  14 November 2001 (2001-11-14)  abstract  page 5, line 28 - page 7, line 22</p>	61-66
P,X	<p>YAN ZIYING ET AL: "Distinct classes of proteasome-modulating agents cooperatively augment recombinant adeno-associated virus type 2 and type 5-mediated transduction from the apical surfaces of human airway epithelia."  JOURNAL OF VIROLOGY,  vol. 78, no. 6, March 2004 (2004-03),  pages 2863-2874, XP002296726  ISSN: 0022-538X  abstract</p>	1-66

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/010045

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0075365	A	14-12-2000	AU 5869400 A	28-12-2000
			CA 2376400 A1	14-12-2000
			EP 1190249 A2	27-03-2002
			JP 2003501068 T	14-01-2003
			WO 0075365 A2	14-12-2000
EP 1153612	A	14-11-2001	CA 2362426 A1	17-08-2000
			EP 1153612 A1	14-11-2001
			CN 1339970 T	13-03-2002
			WO 0047230 A1	17-08-2000